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ROSETTA STONES
- DECIPHERING THE REAL
BY
JAE-MAN CHO
THESIS

Submitted in Partial Fulfillment of the Requirement for the Degree of

Master of Fine Arts in Imaging Arts

COLLEGE OF IMAGING ARTS AND SCIENCES
ROCHESTER INSTITUTE OF TECHNOLOGY
ROCHESTER, NEW YORK
FEBRUARY 2007

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ACKNOWLEDGMENTS

In Confucianism, learning is considered to be one of the virtues that a man has to pursue over his lifetime. Also, it is stated in a scripture of Confucianism that there is something to learn from everyone. Personally, I like this idea very much and keep trying to live my life by this value. In keeping with this idea, an inspirational teacher gives me great joy like that of finding water in a desert. I also believe in my good luck of meeting good people and great teachers. I came to Rochester to learn something new and met those mentors to whom I would like to express my gratitude: Dr. Therese Mulligan, Willie Osterman, and Patricia Russotti.

Dr. Therese Mulligan always made me aware of my weak points and showed me patience. She also helped me with things beyond my ability and assisted me in learning. Professor Willie Osterman recognized possibility in me as an artist and taught me how to develop it. Professor Patricia Russotti gave me wisdom about how to work and taught me how to express and produce beautiful art.

My acknowledgment also cannot be completed without referring to my classmates. They were my strength to overcome difficulties in life, sharing both my pleasures and sadness.

Last, but definitely not least, I thank my family. I thank my parents, who have always believed in me and have taken care of me until I finished this thesis, my wife, who has been by my side through my graduate studies, temporarily putting her own dreams on hold, and my children, who brought me the joy of life.

ROSETTA STONES - DECIPHERING THE REAL

BY

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ABSTRACT

My MFA thesis show *Rosetta Stones - Deciphering the Real*, was an investigation of photography in the digital world.

I would like to address in this thesis the possibility of using photography to investigate the digital world in which we began to live in not too long ago. I want to show the current new imaging status of photography and the direction it might move in the development of digital technology. Today, art coexists and develops alongside science and technology. The main purpose, as well as the starting point of this thesis, is recognizing that mechanically produced images can have aesthetic value when related to the digital realm of imaging. This relationship of the photographic and post-photographic or digital was an important step in my thesis work and points toward my future interest in exploring the art and science of old and new representations.

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1 TWO WORLDS

Stephen Hawking mentioned in the acknowledgments of *A Brief History of Time*¹ that he once received advice from a friend who remarked that including mathematical equations in his books resulted in less sales. Hawking imagined he could write a book very easily – no equations! When I read Hawking's *A Brief History of Time* as a student studying physics, I found all the equations were omitted from the book except one – $E=MC^2$. What did it mean? Why had Hawking kept only Einstein's equation in his book? People who hate physics are those who are afraid to understand and are unaware of the implied meaning of mathematical equations frequently used in physics. An equation in physics implies meaning as much as a novel's narrative does. In the equation " $E=MC^2$ ", E is a variable for energy, M is a variable for mass, and C is a constant representing the velocity of light. In this equation, E and MC^2 have equal value. In other words, they are variables which can be transformed to one form or another. Here, variables, not constants, are E and M and they exist on both sides of the equal sign, which means that two variables – energy and mass – can be transformed by each other. Thus, the world in which we live consists of energy

¹ S. W. Hawking, *A Brief History of Time: From the Big Bang to Black Holes*, first edition ed. (Toronto ; New York: Bantam Books, 1988).

and material and they are interchangeable. Therefore, these two are related in a way that the increase of one results in the decrease of the other, like two children sitting at each end of a seesaw. All materials and forms are the building blocks of our world, as well as that which drives its energy. One single equation – $E=MC^2$ – conspires to explain all matter and forces of life.

Human beings are also material objects having mass. Our body consists of atoms that build to make molecules. Molecules gather together to make proteins and these proteins interact with one another to make the body work. On our planet, humans live and work together creating art, culture, and technology to build a society. Our earth has a satellite called the moon and both revolve around the sun, which is only one of billions of stars in the Milky Way galaxy, which again, is one of billions of galaxies in the known Universe.

Beyond this world that we know, what exists? We don't know who created our world. We refer to God to explain this uncertainty, but it is still true that we do not clearly know. It is not easy to take a whole view of our world, from the microscopic to the infinite. Each one of us is only a small part of its existence.

Yet, there is another realm of 'existence' that human being has created for themselves. A few decades ago, the computer was devised, based upon scientific theories and technology accumulated through time. At first, this machine was only a tool to make repeating and time-consuming calculations easier. However,

as other additional functions were added, it offered greater possibilities. Data storage systems were invented to make calculations more convenient by storing data and enabling analysis and sharing. From this early beginning, computer networks were developed. Whether or not initially intended, a new, far-reaching world was born - the cyber world. It is a world which runs strictly by rules defined by human beings. In the future, perhaps this world will have the ability for self-generation and self-development. But what does this new world mean for us today? We meet people, go shopping, go to the bank and enjoy games in the cyber world. More than its practical uses, the cyber world constitutes a new social structure, so appealing that large segments of our day are spent in this universe. Perhaps, in some ways, it is eclipsing our physical world.²

The cyber world is built on binary codes. It is a mathematical system which performs all the calculations with only two numbers: 0 and 1. All information or data is analyzed and reproduced based on the calculations of 0 and 1. Software and hardware give the cyber world its virtual and physical dimension. Software provides functional energy and hardware is the physical mass, the receptacle which holds the cyber realm.

In Korea, 75% of all households have high-speed Internet service.³ Koreans

² Lawrence Lessig, *Code : And Other Laws of Cyberspace* (New York, N.Y.: Basic Books, 2000).

³ Peter Lewis, "Broadband Wonderland Nearly Everyone in South Korea Has Internet Access That Puts Americans' to Shame. Result: This Little Nation Could Have a Giant Influence on the Digital Future.," *FORTUNE* (September 20, 2004), Website.

think of the Internet in the same way they do about electricity or water. They co-habit two worlds. One is the real world and the other is the cyber world. Korean children do not like to be given real toys by their parents anymore. They love to be given cyber money, which is not real money but a type of currency that can be used online and that many parents buy for their children so that they can play in the cyber world. In the cyber world, children can fight in a mug-game, such as *Lineage* or *Mu*. They can decorate their own luxury cyber house. They can have cyber toys. If they have enough cyber money, they will be able to do anything they want to do, unlike living with the restrictions in the real world. For Korean children, the cyber world is becoming more *real* than the real world.

There is a new slang 'hyun-pi', popular among young Koreans these days. It is a combination of 'hyun', which is from 'hyun-sil', a Korean word for reality, and 'pi', which is from 'Player Kill'. 'Player Kill' is a term used in Internet games by people who do not know one another. It means that a player kills another player in a game and the term 'hyun-pi' means reenacting it in the real world. In other words, it means people actually meet other players and fight them if their online players are killed in the game or they happen to have bad feelings against other players for any reason. We use names called ID and raise our own avatars or characters in the cyber world. These IDs and avatars then become our names and bodies in the cyber world.

What is the real? What is the unreal? How do we distinguish between these two different realms of being? Do we live in the clone world, such as depicted in the movie *Thirteenth Floor* by Josef Rusnak?⁴ Are our minds being confined by virtual codes as in the *Matrix*?⁵ How can we answer these questions? Can we say that the real world is more real than a virtual world when the virtual world takes on meaning and purpose as in the real world? Questions like these became the starting point of my graduate work.

4 Josef Rusnak, "The Thirteenth Floor," (USA: 1999).

5 Andy and Larry Wachowski, "The Matrix," (USA: Warner Bros. Pictures, 1999).

2 THE HISTORY OF MANIPULATION IN PHOTOGRAPHY

I stated earlier that we live in two different worlds. Photography was developed to record reality in the world we know, and it is considered to be one of the primary methods to re-present reality. Although its meaning has diminished in the present, the value of the photography as a method to record reality as it is still cannot be ignored. What is going to be the method to record the digital world then? I became interested in finding out the technical transformation of a photograph. Photography was released from the responsibility of representing reality, and became capable of making new creations by the development of manipulation techniques. Like language has affected reality by expanding the width of our thinking with linguistic technique, photography as a visual language has been used as a method to record, understand and effect a change in our understanding and knowledge of reality. In that sense, investigating the history of manipulation in photography is important because it reflects the technical side of my approach to picturing reality. So, I will investigate the history of manipulation in photography as a first step to trace the methods used to represent and transform reality.

2.1 THE VICTORIAN AGE

The manipulation of the photographic image can be traced to the medium's origins. Victorian photographers overthrew photographic conventions as they manipulated photography's optical and chemical components to create works that looked like narrative paintings. These photographs, like Oscar G. Rejlander in his *Two Ways of Life*, combined several photograph parts from previous photographs to construct a new image that would then be re-photographed. This manipulative technique was known as combination printing. *Two Ways of Life* consists of more than thirty separate images and measures 31 by 16 inches.

Writing in the book *Photomontage*, historian Dawn Ades noted about Rejlander:

“He thought of his ‘multiple pictures’ in relation to painting: to show the artist how useful photography might be as an aid to their art, not only in details but in preparing what may be regarded as a most perfect sketch of their composition.”⁶

It was common practice in the nineteenth century to use combination printing to add figures to a landscape photograph, but other effects of photographic manipulation included double exposure. In spirit photography, the use of double exposure hinted at the supernatural world of ghosts or the spirits

⁶ Dawn Ades, *Photomontage*, Rev. and enl. -- ed., *World of Art*. (London ; New York: Thames and Hudson, 1986). Page

of lost loved ones.

2.2 MODERNISM

In the Modernist movement, the manipulation of the photographic image reached new expressive heights. Important among these new expressions was photomontage. The term 'photomontage' was not invented until just after the World War I, when the Berlin Dadaists needed a word to describe their new technique of introducing photographs into their works. In German, montage means "fitting" or "assembly line", and Monteur "mechanic", or "engineer." "Seized with an innovatory zeal," Dadaist Raoul Hausmann wrote, "I also needed a name for this technique, and in agreement with George Grosz, John Heartfield, Johannes Baader, and Hannah Höch, we decided to call their works photomontages. This term translates our aversion at playing the artist, and, thinking of ourselves as engineers (hence our preference for workmen's overalls) we meant to construct, to assemble [montieren] our works."⁷

Dadaists, like Hausman and his colleagues, appeared to be against oil painting, which is essentially unrepeatable, private, and exclusive. They preferred the ready-made, repeatable photograph, drawn from newspapers

⁷ Ibid. Page 12

and magazines and combined them with lettering and drawing. They liked the technological world, the world of mass communication and photomechanical reproduction. These elements also influenced the political photomontage created by Russian constructivists.

Berlin Dadaists and Constructivists sought to be avant-garde, breaking with traditional conventions found in art for a more progressive visual expression aligned with popular visual culture.

“...our whole purpose was to integrate objects from the world of machines and industry in the world of art. Our typographical collages or montages set out to achieve this by imposing, on something which could only be produced by hand, the appearance of something that had been entirely composed by a machine; in an imaginative composition, we used to bring together elements borrowed from books, newspapers, posters, or leaflets, in an arrangement that no machine could yet compose.”⁸

As photographs and art history has shown, photomontage is a valuable tool for reforming the visual arts. Photography's basis in reality and display in culture has given the medium a powerful status. And with its use in photomontage, the photograph became a powerful player in creating new modes of social and political meaning.

⁸ Edouard Roditi, “Interview with Hannah Höch,” *Arts* December 1939; reprinted in Lippard, 73 <--Dream, Lies, and Exaggerations Photomontage in America, Cynthia Wayne, The art Gallery University of Maryland at College Park

2.3 THE CONTEMPORARY MANIPULATION OF PHOTOGRAPHY

In American photography, photomontage reemerged in the 1960s as an important approach to examining photographic picture-making practices. Jerry Uelsmann was a significant practitioner, drawing upon the Victorian work of Rejlander and Robinson. He explored combination printing while engaging the importance of the hand crafted photographic object. Influenced by Surrealism, Uelsmann examined his work in self-expression and psychological meaning. Manipulation, for Uelsmann, resulted in photographs of highly charged personal commentary.

- *Computer manipulation*

After World War II and during the Cold War, scientists, engaged in the arms race, developed a computer to help calculate the ICBM's (an intercontinental ballistic missile) trajectory. From this early beginning, computers rapidly developed as aids to calculation, storage, and access of information or data. Governmental priorities soon gave way to social possibilities for the computer, as its benefits in influencing many aspects of everyday life became evident. One important aspect was the influence of computing in the visual arts. In the 1970s and 1980s, artist Nancy Burson developed morphing software enabling her to "age" portraits of individuals and create composite faces. Burson's work showed

the power of computing and software to create new images of visual artistic expression. Perhaps more dramatically, in 1990, Adobe announced a powerful and manipulative software program titled Photoshop 1.0. This program would have an impact upon all individuals who used the photographic image in the digital world - photographers, artists, designers, and publishers. Photoshop 1.0, and subsequent image software programs, was a powerful tool, combining for many art and technology in a new meaningful and contemporary way.

The digital world as represented by the development of software and hardware offered visual artists new modes of visual expressions based on the manipulative effects of translating analog images into the binary code of digital images. Today via digital capture, scanning, or internal appropriation, images have new functions and new meanings. Art and technology are intertwined, creating images that may appear to be related to our physical world of the real but need not be derived from it. Digital image technology makes us look at images, both the analog and digital, anew. Questions of the real and authenticity, originality and illusion challenge our accepted beliefs about the representational image. Digital manipulation and its impact in the ways an image is conceived, created and disseminated represents one of the challenges to our accepted beliefs. As has been shown through history, manipulation, whether in the analog or digital world, provides new relationships to challenge

and critique, interpret and discuss images of personal and cultural meaning. It is this relationship I chose to investigate in my thesis work.



Figure 1 *Different Seoul W3*, 5"x7", Inkjet Print, Dec 1998

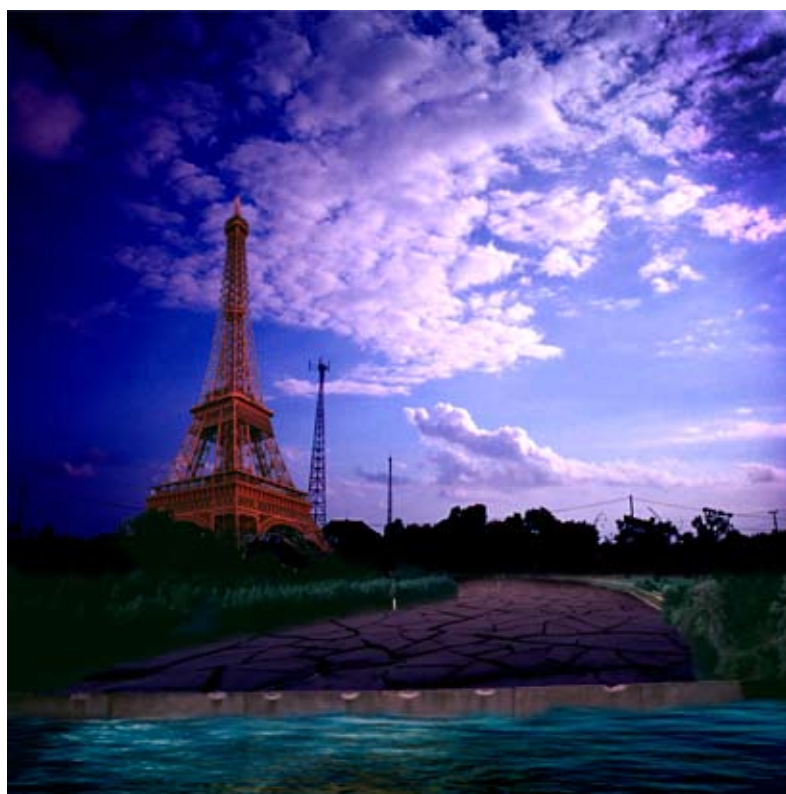


Figure 2 *Dream and Rainbow #3*, 18"x18", Inkjet Print, 2000

3 THE INFLUENCE OF DIGITAL PHOTOGRAPHY IN MY ARTWORK

3.1 ORIGINS

In 1998, before starting my investigations into the relationship of analog and digital photography, I thought digital photography was simply creating photographic images using digital instruments. This observation led me to start work with only a little bit of knowledge of computers and limited skills in software imaging. The concept of my investigation was very simple. I wanted to explore a kind of “photographic” image totally immersed in the digital realm and only partially connected to the physical world. The method for the work was simple. First, I took pictures of the world. I then combined them with astronomical pictures obtained from the Internet. (Figure 1) At the time, I thought this was the best way to express a digital intent in my work. I created an entire series of images in which I composited photographs taken during my travels with photographs of miniatures I created. This kind of compositing is reminiscent of the work of past practitioners of the combination print - Rejlander, Robinson and Uelsmann. I sought manipulation of the photographic image, drawn from both analog and digital realms, to create new-pictured worlds. Like a painter, I framed my concept in a painterly fashion, filling a white canvas step-by-step

with various images to get a pictorial effect unlike that found in traditional photography. (Figure 2)

I was very satisfied with this work, believing this was a new pictorial form and sure this was the direction in which my digital interests should proceed. I decided to study to build a stronger historical and practical background. My graduate studies led me to new understanding of photography that I had not been aware of.

At the RIT library, I found a political poster designed by a Russian constructivist.(Figure 3) This poster had a powerful influence on me. The artist manipulated photographs by combining them without the benefit of Photoshop or other digital imaging technologies. I was amazed! The work looked clumsy, yet perfectly delivered the political message the artist wanted to tell. Lastly, it was aesthetically beautiful in composition and intent.

This constructivist poster got me thinking and asking questions about traditional and digital photography. With digital imaging, images can be produced that mimic analog images in appearance. It is hard to tell the difference at times. But what is digital photography about? Mimicking another visual medium? What are the distinguishing features of digital photography that separates it from analog photography?



Figure 3 *Russian Poster*, Rochester Institute of Technology Wallace Library

When I first became interested in digital photography, I read the groundbreaking book *Being Digital*⁹ by Nicholas Negroponte. In this book, the author said that we live in two very different worlds. One is a world consisting of atoms. The other consists of digital bits, created by humans. I recognized that this proposition could also be applied to photography. Traditional analog photography is based upon film consisting of atoms and molecules. Film reacts to energy called light that changes its molecular structure. Film records and reproduces images by chemical reaction through development and contact with light-sensitive papers or other light-sensitive materials. However, digital photography is based on a different process, in which light is transformed into electrical signals. Unlike film that undergoes a permanent structural change once materially effected, digital processing is semi-permanent. It senses light and measures the strength of light, translating strength and duration into electronic pulses of information. To make visual these electronic pulses, converters transform electronic signals into digital signals called bits. In digital photography, process emphasizes translation rather than reproduction of visual information into multiple formats for use, many of which take no physical form as in traditional photography.

Since its invention in 1839, photography has been a reflection of its makers

⁹ Nicholas Negroponte, *Being Digital*, 1st ed. (New York: Knopf, 1995).

and users' desire to record and reproduce the world and its physical reality. For many makers and users' this desire has extended to digital photography. Think of all the snapshots, advertising and commercial photographs that use digital imaging as part of their creation. To me, there had to be more to say about the digital photograph and in a way where I could investigate what it meant, as Negroponte put it, "being digital." This framed my thesis project and its goals.

As I began my thesis work, I first started to explore a fundamental digital element - the bit. It is only a number, but is a meaningful symbol which enables humans to do a lot of things. There are a number of numbers. There are integers like 0, 1, 2, 3, 4, 5, ... and innumerable rational numbers between them. There are countless irrational numbers as well. These numbers enable us to measure and speculate, question and know the workings of the world in its physical dimension. Numbers are the powerful tools of scientists and physicists, for all kinds of investigators who wish to create understanding and knowledge.

In the movie *The Thirteenth Floor*,¹⁰ the hero creates a virtual space within the world he lives. Playing the role of God, the hero populates his space with beings who are unaware that they were specially designed and are controlled by the hero-god. In the movie, one of these beings learns he is a creation living in a virtual world of someone else's design. Reality as he knows is swept away and

¹⁰ Josef Rusnak, "The Thirteenth Floor," (USA: 1999).

the being realizes that he has had no self-determination or free will. His world and reality is merely a sham.

The rise of our digital world has led many filmmakers and artists to consider alternate realities and illusions of virtual worlds. What is of primary interest to me is an examination of reality itself and an authentic experience. In the digital world, reality and experience take on new virtual forms that may or may not resemble our physical world. Yet people are drawn to the digital brand of authenticity, with its virtual interactions and relationships.

I started my work thinking that taking bits out of the real world and displaying them could be a method of digital photography. The play of physical and virtual reality framed my early exploration in digital photography. I sought to take numerical bits from the digital world and give them visual expression and appearance. In this way I tried to capture the importance of digital translation, the process of transforming physical information, like pictures, into digital information. It was the process of translation that became the subject of my new work. Building on my earlier work, I chose a photograph made by a pinhole camera and recorded on Polaroid film, I scanned the film, converting the picture into digital numerical code. The translation of this image's numerical code was then extracted and placed digitally onto the image. In this work, as seen in figure 4, I wanted to combine two realities: 1.) The photograph of a landscape and 2.)

The new reality of the photograph in the digital realm, reduced to its numerical binary code. Both realities are authentic as this work demonstrates, given their presence in either the physical or virtual world.

What I learned from this body of work is that the translatability of digital imaging could create a visual language with an aesthetic appearance and meaning. I thought this was a good way to visualize digital code but also a way to communicate with the virtual world, questioning its appearance and function.

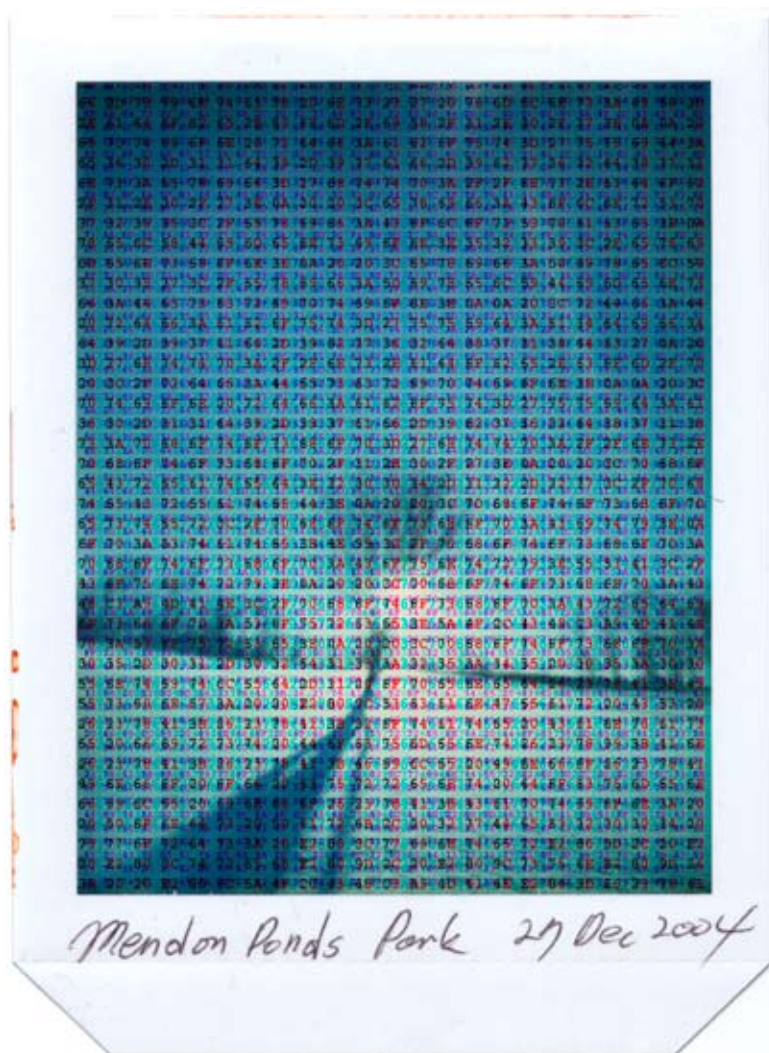


Figure 4 Mendon Ponds Park 27 Dec 2004, 8"x10", Inkjet Print, 2004

3.2 VISUALIZING THE DIGITAL WORLD

The next step in exploring the relationship between codes and pictorial images led me to design specific software programs that would extract binary codes from image files. Image files, like all informational or data files, are stored in computers as records in the form of binary codes. The programs I designed were made to read a file's binary code and then to translate this code into readable text, not based on numbers but on alphabetic letters. The text I hoped to create would show the value of every pixel of an image I had digitized by scanning. The end result would be a new kind of visual image solely based on the translation of the binary code into textual patterns of letters (Figure 5). The length of the text was limited to all the binary codes that comprised the digitized image. As seen in figure 5, I outputted this new code-based image on paper with inkjet printing.

When I studied this new work, such as 01-100, I noticed that each image produced a certain pattern of lines and shapes; lightness and darkness resembling the pixilated patterns found on a computer monitor or produced when using a digital printer. These patterns spoke to the 'material' specificity of the digital world and thus was a new kind of appearance unrelated to preceding traditional visual media, like analog photography. I was fascinated by these patterns created when the text was translated onto paper in the inkjet process. I

decided to make this the new subject of a new body of work.

In figures 6-10, my new approach is illustrated. I began this series by considering how to combine more effectively the digitized binary code of a scanned analog image into a final image. This process involved remediation of the original image, its digitized image file, and its binary code. I again designed a software program that enabled me to extract an image's binary code and translate it into letters, which I then colored using Photoshop. The results are images that are about a conversation between the analog and digital world. Manipulations to the binary code enabled me to represent the source image – a landscape – through colorized textual translation of the digital image file. Here the remediating nature of digital imaging is pronounced via its ability to transform, re-interpret and produce new visual expressions.

This new body of work was a great experience for me as I furthered my investigations into the digital realm. However, I soon began to see that perhaps it was a cowardly thing to make a considerable point of re-displaying source material in my work. Was this way of working simply an easy commentary on the intertwining nature of photographic and digital image making? A one-liner that did not do justice to a real examination of images in the digital realm. I came to believe so. If I was going to make artistic work wholly digital in subject and intent, I knew I needed to immerse my work in that particular reality.

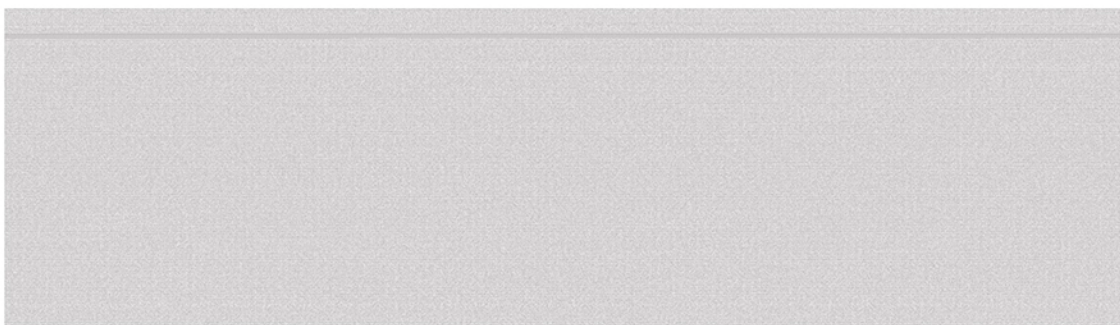


Figure 5 *01_100*, 20"x10", Inkjet Print, 2005

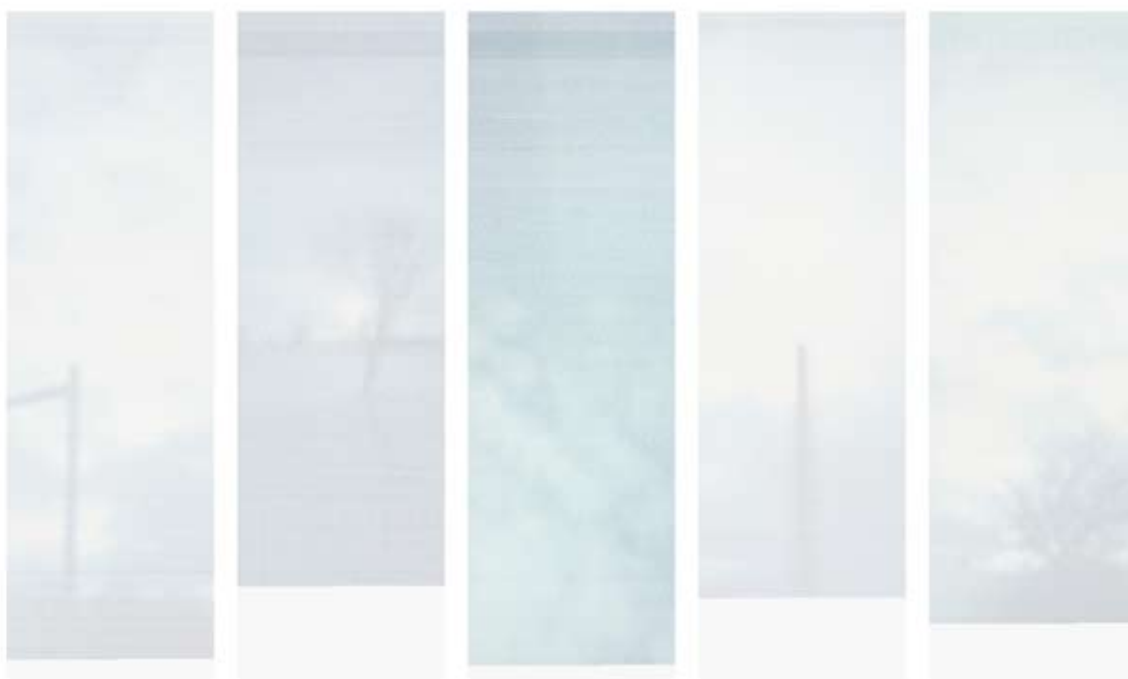


Figure 6 *640,284 bits Landscape*, 18"x58", Inkjet Print, 2005

Figure 7 *505,840 bits Landscape*, 18"x58", Inkjet Print, 2005

Figure 8 *565,849 bits Landscape*, 18"x58", Inkjet Print, 2005

Figure 9 *1,343,662 bits Landscape*, 18"x58", Inkjet Print, 2005

Figure 10 *655,078 bits Landscape*, 18"x58", Inkjet Print, 2005



Figure 11 *Newspaper I / II*, 20"x60", Inkjet Print, 2006



Figure 12 *Newspaper III / IV / V*, 20"x60", Inkjet Print, 2006

3.3 THE THESIS EXHIBITION

What does recording and presenting information mean in the digital world? For the better part of two centuries, photography was the primary way in which information about the world was recorded and disseminated. The genre of photojournalism, documentary and photo reportage are evidence of this use of the photographic image to convey information. In my thesis work, I became interested in exploring how the digital world and the ways in which it recorded and presented information had now superseded this primary function of the analog photographic image. In my thesis project, I began to examine websites, in particular international newspaper websites, to understand the changing world of information disseminated via the media.

Since the introduction of the printing press, the newspaper has been a powerful cultural tool of information display and dissemination the world over. The development of photomechanical printing processes in the last decade of the nineteenth century, uniting image and text together, gave rise to the picture press and ushered in a new visual culture based on the illustrated page, including newspapers. Today, newspapers in their desire to stay relevant in the face of embracing digital world have seized upon the Internet as a way to increase their public presence and relevancy. For the most part, media companies display newspapers in the digital realm in a format reminiscent of the

printed page. In an act of remediation, the appearance of a newspaper website mimics the physical appearance of the printed newspaper in the real world. Yet there are differences due to the interactive and real-time character of the digital world. For example, most Korean newspaper websites are automatically updated with real-time news and public opinion offered by readers who criticize every article or express their opinions. While some comments show lack of knowledge or are narrow-minded in their content, public opinion via the digital newspaper website has been found to lead to new political movements in Korea. Through remediation, media companies have given new life to the historical newspaper format by weaving word, image, sound and interactivity into a new public expression of information display and usership.

The evolving world of newspapers from the analog to the digital world, its prominence in Korean culture, and the interplay of information, display and dissemination provided me with a new context to enlarge my exploration of the connections between the analog and the digital, between the photographic image and the digital image. I began to browse newspaper websites from other countries besides Korea and sorted them by the pictorial characters or language they exhibited. I finally decided upon Arabic, Alphabet, Korean, Japanese and Chinese newspapers as source materials which is simply digital pages of information. Exploring a software program called *Screen Capture*, I digitally

recorded the “pages” of ten newspaper websites.

Up to this moment in my process, the notion of digital capture was significant for me because it supposed a new approach for apprehending, copying, recording, ordering, displaying and the dissemination of information. But I realized that capture was only one important aspect of my investigation. My newly developing body of work also needed to incorporate the essential element of time. For newspapers, whether print or digital, time informs how fast information is received, refreshed and delivered. Time also determines a newspaper’s relevancy as it collapses hours, minutes and seconds into the immediate.

In the *Newspaper* series (Figure 11-12), I introduced ‘digital time’ by utilizing the standard of the digital worlds-Swatch time. The regulation of time on the Internet is not like the regulation of time in the physical world with time zones based on the rising and setting of the sun. Instead, in the virtual realm, the twenty-four hour day is divided into 1000 beats¹¹ so that across the world there is a synchronicity of time and geographical place based on a particular beat. This beat is a unifying force in the Internet. (This system for regulating time on the Internet was introduced by Swatch, the European watchmaker.) In the *Newspaper* series, I employed the “beat” of Internet time to capture the visual

¹¹ the unit of Swatch time.

data of newspaper texts and image from different times of the day and merged them into one single file of digital information and displayed based on time and geography. By layering these source files, the final newspaper images achieved the look of a kind of map, with shapes and colors determined by the layer of time, text and image.

As I mentioned earlier, in the *Newspaper* series, I used a software program called *Screen Capture* to record and display news information found in the digital world. This program enabled me to directly copy information as visual data transformed into visual art based on form and shape not translatable as readable text. Here appearance is of concern, as well as time and the cacophony of sensory data visualized on a monitor's display.

My process in the *Newspaper* series included extracting the binary codes from the image files I made with the *Screen Capture* software program. These binary codes have their own distinct form since they are based on the pictorial and written languages of different cultures. For example, the Arabic language is written from right to left. In Arab news websites, this causes the menu-bar to appear on the right, unlike English language websites with menu-bars on the left. Korean news websites emphasize pictures over text and Japanese news websites are constructed with large areas of white space due to the desire for large, readable text, thus different language, based on cultural individuality and

concerns, display distinctive features. It was my intent in the *Newspaper* series to play upon these distinctions and their aesthetic value as unique visual forms of digital display.

An important aspect of my *Newspaper* series and in all my work is visualizing metadata. Metadata is an intrinsic component of all digital information, from files to programs. It is a set of data, like binary codes, and then information about this data, such as actions, uses, adjustments, etc. (Simply, metadata is information about data.) The binary codes I present in my work is my means to reveal metadata, information that is visually hidden from view but, in reality, is at the core of all things digital. In my work, metadata (binary codes) is both *process* and *product*. (Figure 13)

In the *Newspaper* series, I sorted, transformed and remediated the metadata of each of the five language news websites.¹² I experimented by modifying the binary codes of the image files I created in the *Screen Capture* program, I had some interesting results. For example, random modification of binary codes of a bitmap image file that has no color but white created pixels of color when viewed on a monitor or in print. My experimentations with binary code led me to even greater investigation with programming of visual files.

As mentioned earlier, everything in the digital world exists as binary code

¹² Website list at end of book.

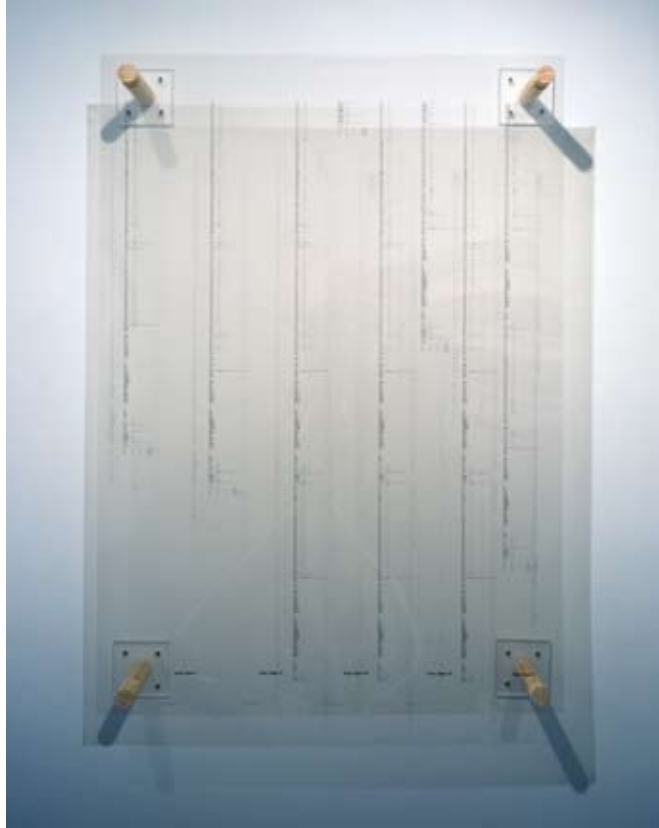


Figure 13 *Newspaper Index*, 30"x40", Lamda Print, 2006



Figure 14 *This is blue*, 20"x20", Inkjet Print, 2005

or metadata. And this code has identical elements – 0 and 1. It is the various sequences of 0 and 1 that results in texts, images, movie chips or music. In my experimentations, I noticed that the elements of a binary code are transposable or interchangeable. So, for example, images that exist of colored pixels can be obtained by modifying the binary codes the 0's and 1's of text files. Based on this recognition, I began to study more in depth programming, eager to learn ASCII code, the most familiar text – code program used in computers. In ASCII, a two-bit code is used to distinguish each letter in the alphabet. An uppercase "A" is equivalent to '0100 0001' in binary ASCII code. For programmers, '0100 0001' is too long and inconvenient to read so a shorthand means of expressing binary code sequences has developed for ease of accessibility and understanding. This shorthand method is hexadecimal numbers in which a four digit binary number can be read as a single hexadecimal number. So "A" = 0100 0001 = 4 1 (0100 = 4; 0001 = 1).

In the *Newspaper* series and the work *This is blue* (Figure 14), I experimented with modifications of programming the ASCII code, transposing of elements in the binary code or hexadecimal number. These modifications then enabled me to investigate the binary code by which a computer recognizes color – red, green and blue. Each color has a two bite hexadecimal number (or an 8 digit binary number). In the *Newspaper* series and *This is blue*, I modified the color

pixels of my images by transforming the hexadecimal code of the text and vice versa. I created a program that provided me the ability to translate texts into images and images into texts by playing with the building blocks of metadata – binary code. And importantly, to visualize the essential nature of the digital realm – abstract numerical values – and their interchangeability.

In *Translatability* (Figure 15), my thesis audience was able to see and play with my program and its results first-hand. Viewers inputted words via a keyboard linked to a computer on which my program was running. As the chosen word was typed, the program calculated and adjusted the hexadecimal value of the first three letters of any given word. The value of these three letters was given a new hexadecimal number related to color. The resulting images were bars of sequential color equal to the hexadecimal values of the text. In this way, the audience not only participates in the making of my work but became aware of the essential interrelationship of process and product, metadata and visualized information of the digital realm.

In retrospect, looking back to the developing course of my work from analog to digital art making, I can't help but see an element of magic at work. In fact, all of my experimentations and explorations hold for me a magical sensibility of transformation. From image files to source metadata, capture programs to self-devised programs, transformation or magic is a hallmark of my work. Perhaps



Figure 15 *Translatability*, Computer program and installation, 2006



Figure 16 *Rosetta Stones - Harry Potter Sorcerer's Stone, 128.4"x20" / Chamber of Secrets, 143.6"x20" / Prisoner of Azkaban, 178.533"x20" / Goblet of Fire, 324.267"x60"*, Inkjet Print on satin cloth, 2006

that is why I was drawn to the *Harry Potter* novels for my next body of work – *Rosetta Stones*.

Based on the translation or transformation of text into image in my *translatability* work, I decided to put my program to the test by translating a long piece of literature. With help from some programmers, I produced another software program that produced an image by ‘color-coding’ every three letters of the novel’s text from beginning to end. As my source, I chose the *Harry Potter* series of children’s book due to a large part in the wonders and mystical nature of magic.

In *Rosetta Stones*, four of the *Harry Potter* novels – *Sorcerer’s Stone*, *Chamber of Secrets*, *Prisoner of Azkaban* and *Goblet of Fire* – are rendered in four separate inkjet images on satin. The four images are displayed like ancient scrolls, with a long horizontal orientation. The length of the display was determined by the sequence of color, translated from every three letters of the text by binary-code manipulations. The sequence starts and stops in relation to the beginning and the end of the novel’s text, to the placement of sentences, paragraphs and chapters – the defining form of a novel. The resultant images are large-scale works, whose shape and form mimics that of the novel it ‘translates.’ At first glance, the close proximity of colors derived from the text are combined to create a kind of achromatic ‘noise.’ It is only by approaching and studying

each image that color detail can be seen and appreciated.

Rosetta Stones best exemplifies my interest in engaging the real and the digital world, the translatability of text and image, and their aesthetic possibilities for a visual artist. My adaptation of the *Harry Potter* books was also indicative of my exploration of transformation as these books have been translated in numerous languages, transformed by language and culture, as I have been as a Korean living and studying in the United States. Transformation, for me, is both real and magical and as a visual artist it is the objective and the goal, process and product of my work in the digital realm.

4 CONCLUSION

At home, young Koreans decorate their cyberspace with images downloaded from their digital camera and cellular phones. The software programs these Koreans use are not much different than that of experts, such as Photoshop. And the amount of images they create far outnumber those produced by artists. As a young student photographer influenced by new digital imaging technologies, I wanted to better my skills and to understand the complexities and aesthetic possibilities of the digital world. In my thesis exhibition, I expanded upon my understanding of photography (analog and digital) and its new rule and status in 'new media.' I came to realize that the digital realm was transforming and uniting all media – text, music, and photography. And at the heart of all those digital media was the magic of metadata and the ability preserve, change, translate and transpose the world, as we know it. My work is about the *remediation* of process and product of the mechanically translated image into a new contemporary aesthetic art form. It is this remediating spirit that will inform my future artwork.

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LIST OF WEBSITE FOR THE NEWSPAPER SERIES

Arabic Language newspaper site capture date, beat time, web address :

Picture 1.png	27-Dec-05	@396	http://www.albawaba.com/ar/countries/Sudan/
Picture 2.png	27-Dec-05	@397	http://www.alniliin.com/
Picture 3.png	27-Dec-05	@398	http://www.alayaam.net/
Picture 4.png	27-Dec-05	@399	http://www.rayaam.net/
Picture 5.png	27-Dec-05	@400	http://www.irna.ir/?LANG=AR&PART=_HOME&TYPE=HP
Picture 6.png	27-Dec-05	@401	http://www.alanwar.com/ar/
Picture 7.png	27-Dec-05	@402	http://www.assafir.com/iso/today/front/summary.html
Picture 8.png	27-Dec-05	@403	http://www.al-jazirah.com/
Picture 9.png	27-Dec-05	@404	http://www.asharqalawsat.com/
Picture 10.png	27-Dec-05	@405	http://www.ahram.org.eg/

Alphabet Language newspaper site capture date, beat time, web address :

Picture 1.png	27-Dec-05	@298	http://www.cnn.com/
Picture 2.png	27-Dec-05	@299	http://nytimes.com/
Picture 3.png	27-Dec-05	@300	http://www.usatoday.com/
Picture 4.png	27-Dec-05	@301	http://www.washingtonpost.com/
Picture 5.png	27-Dec-05	@302	http://news.bbc.co.uk/
Picture 6.png	27-Dec-05	@303	http://www.timesonline.co.uk/
Picture 7.png	27-Dec-05	@304	http://www.canada.com/nationalpost/index.html
Picture 8.png	27-Dec-05	@305	http://www.metrofrance.com/site/home.php
Picture 9.png	27-Dec-05	@306	http://www.boersen-zeitung.com/online/redaktion/aktuell/index_at.html
Picture 10.png	27-Dec-05	@307	http://www.corriere.it/

Chinese Language newspaper site capture date, beat time, web address :

Picture 1.png	27-Dec-05	@377	http://www.bjd.com.cn/
Picture 2.png	27-Dec-05	@378	http://news.thebeijingnews.com/
Picture 3.png	27-Dec-05	@379	http://www.china.com.cn/chinese/index.htm
Picture 4.png	27-Dec-05	@380	http://www.chinabyte.com/
Picture 5.png	27-Dec-05	@381	http://www.legaldaily.com.cn/
Picture 6.png	27-Dec-05	@382	http://www.people.com.cn/
Picture 7.png	27-Dec-05	@383	http://www.xinhuanet.com/
Picture 8.png	27-Dec-05	@384	http://www.ttnn.com/cna/news.cfm
Picture 9.png	27-Dec-05	@385	http://news.chinatimes.com/mainpage.htm
Picture 10.png	27-Dec-05	@386	http://www.libertytimes.com.tw/

Japanese Language newspaper site capture date, beat time, web address :

Picture 1.png	27-Dec-05	@358	http://www.nikkei.co.jp/
Picture 2.png	27-Dec-05	@359	http://www.mainichi.co.jp/
Picture 3.png	27-Dec-05	@360	http://www.asahi.com/
Picture 4.png	27-Dec-05	@361	http://www.yomiuri.co.jp/
Picture 5.png	27-Dec-05	@362	http://www.sankei.co.jp/
Picture 6.png	27-Dec-05	@363	http://www.kyoto-np.co.jp/
Picture 7.png	27-Dec-05	@364	http://www.hokkaido-np.co.jp/
Picture 8.png	27-Dec-05	@365	http://www.nishinippon.co.jp/
Picture 9.png	27-Dec-05	@366	http://www.nikkansports.com/
Picture 10.png	27-Dec-05	@367	http://www.worldtimes.co.jp/

Korean Language newspaper site capture date, beat time, web address :

Picture 1.png	27-Dec-05	@334	http://www.chosun.com/
Picture 2.png	27-Dec-05	@335	http://www.join.com/
Picture 3.png	27-Dec-05	@336	http://www.donga.com/
Picture 4.png	27-Dec-05	@337	http://www.hani.co.kr/
Picture 5.png	27-Dec-05	@338	http://www.yonhapnews.co.kr/
Picture 6.png	27-Dec-05	@339	http://www.zdnet.co.kr/
Picture 7.png	27-Dec-05	@340	http://www.etnews.co.kr/
Picture 8.png	27-Dec-05	@341	http://www.hankyung.com/
Picture 9.png	27-Dec-05	@342	http://www.stoo.com/
Picture 10.png	27-Dec-05	@343	http://www.mk.co.kr/